SEQUENCE LISTING

<110> ITOH, Kyogo; Sumitomo Pharmaceuticals Company, Limited

<120> A Novel Tumor Antigen SART-3, and It's Tumor Antigen Peptides

<130> 661463

<150> Japan: 98-242660

<151> 28. 08. 98

<160> 64

<210> 1

<211> 963

<212> PRT

<213> Homo sapiens

<400> 1

Met Ala Thr Ala Ala Glu Thr Ser Ala Ser Glu Pro Glu Ala Glu Ser
                        5   10   15

Lys Ala Gly Pro Lys Ala Asp Gly Glu Glu Asp Glu Val Lys Ala Ala
                20   25   30

Arg Thr Arg Arg Lys Val Leu Ser Arg Ala Val Ala Ala Ala Thr Tyr
            35   40   45

Lys Thr Met Gly Pro Ala Trp Asp Gln Gln Glu Glu Gly Val Ser Glu
            50   55   60

Ser Asp Gly Asp Glu Tyr Ala Met Ala Ser Ser Ala Glu Ser Ser Pro
    65   70   75   80

Gly Glu Tyr Glu Trp Glu Tyr Asp Glu Glu Glu Glu Lys Asn Gln Leu
                85   90   95

Glu Ile Glu Arg Leu Glu Glu Gln Leu Ser Ile Asn Val Tyr Asp Tyr
                100   105   110

Asn Cys His Val Asp Leu Ile Arg Leu Leu Arg Leu Glu Gly Glu Leu
            115   120   125

Thr Lys Val Arg Met Ala Arg Gln Lys Met Ser Glu Ile Phe Pro Leu
            130   135   140

Thr Glu Glu Leu Trp Leu Glu Trp Leu His Asp Glu Ile Ser Met Ala
145   150   155   160

5   Gln Asp Gly Leu Asp Arg Glu His Val Tyr Asp Leu Phe Glu Lys Ala
                    165   170   175

     Val Lys Asp Tyr Ile Cys Pro Asn Ile Trp Leu Glu Tyr Gly Gln Tyr
                    180   185   190

     Ser Val Gly Gly Ile Gly Gln Lys Gly Gly Leu Glu Lys Val Arg Ser
10   195   200   205

     Val Phe Glu Arg Ala Leu Ser Ser Val Gly Leu His Met Thr Lys Gly
            210   215   220

     Leu Ala Leu Trp Glu Ala Tyr Arg Glu Phe Glu Ser Ala Ile Val Glu
     225   230   235   240

15   Ala Ala Arg Leu Glu Lys Val His Ser Leu Phe Arg Arg Gln Leu Ala
                    245   250   255

     Ile Pro Leu Tyr Asp Met Glu Ala Thr Phe Ala Glu Tyr Glu Glu Trp
                    260   265   270

     Ser Glu Asp Pro Ile Pro Glu Ser Val Ile Gln Asn Tyr Asn Lys Ala
20   275   280   285

     Leu Gln Gln Leu Glu Lys Tyr Lys Pro Tyr Glu Glu Ala Leu Leu Gln
            290   295   300

     Ala Glu Ala Pro Arg Leu Ala Glu Tyr Gln Ala Tyr Ile Asp Phe Glu
     305   310   315   320

25   Met Lys Ile Gly Asp Pro Ala Arg Ile Gln Leu Ile Phe Glu Arg Ala
                    325   330   335

     Leu Val Glu Asn Cys Leu Val Pro Asp Leu Trp Ile Arg Tyr Ser Gln
            340   345   350

     Tyr Leu Asp Arg Gln Leu Lys Val Lys Asp Leu Val Leu Ser Val His

```
                355                360                365
        Asn Arg Ala Ile Arg Asn Cys Pro Trp Thr Val Ala Leu Trp Ser Arg
                370                375                380
        Tyr Leu Leu Ala Met Glu Arg His Gly Val Asp His Gln Val Ile Ser
    5   385                390                395                400
        Val Thr Phe Glu Lys Ala Leu Asn Ala Gly Phe Ile Gln Ala Thr Asp
                               405                410                415
        Tyr Val Glu Ile Trp Gln Ala Tyr Leu Asp Tyr Leu Arg Arg Arg Val
                           420                425                430
   10   Asp Phe Lys Gln Asp Ser Ser Lys Glu Leu Glu Glu Leu Arg Ala Ala
                    435                440                445
        Phe Thr Arg Ala Leu Glu Tyr Leu Lys Gln Glu Val Glu Glu Arg Phe
                450                455                460
        Asn Glu Ser Gly Asp Pro Ser Cys Val Ile Met Gln Asn Trp Ala Arg
   15   465                470                475                480
        Ile Glu Ala Arg Leu Cys Asn Asn Met Gln Lys Ala Arg Glu Leu Trp
                           485                490                495
        Asp Ser Ile Met Thr Arg Gly Asn Ala Lys Tyr Ala Asn Met Trp Leu
                    500                505                510
   20   Glu Tyr Tyr Asn Leu Glu Arg Ala His Gly Asp Thr Gln His Cys Arg
                415                520                525
        Lys Ala Leu His Arg Ala Val Gln Cys Thr Ser Asp Tyr Pro Glu His
                530                535                540
        Val Cys Glu Val Leu Leu Thr Met Glu Arg Thr Glu Gly Ser Leu Glu
   25   545                550                555                560
        Asp Trp Asp Ile Ala Val Gln Lys Thr Glu Thr Arg Leu Ala Arg Val
                    565                570                575
        Asn Glu Gln Arg Met Lys Ala Ala Glu Lys Glu Ala Ala Leu Val Gln
                    580                585                590
```

Gln Glu Glu Glu Lys Ala Glu Gln Arg Lys Arg Ala Arg Ala Glu Lys

595 600 605

Lys Ala Leu Lys Lys Lys Lys Lys Ile Arg Gly Pro Glu Lys Arg Gly

610 615 620

5 Ala Asp Glu Asp Asp Glu Lys Glu Trp Gly Asp Asp Glu Glu Glu Gln

625 630 635 640

Pro Ser Lys Arg Arg Arg Val Glu Asn Ser Ile Pro Ala Ala Gly Glu

645 650 655

Thr Gln Asn Val Glu Val Ala Ala Gly Pro Ala Gly Lys Cys Ala Ala

10 660 665 670

Val Asp Val Glu Pro Pro Ser Lys Gln Lys Glu Lys Ala Ala Ser Leu

675 680 685

Lys Arg Asp Met Pro Lys Val Leu His Asp Ser Ser Lys Asp Ser Ile

690 695 700

15 Thr Val Phe Val Ser Asn Leu Pro Tyr Ser Met Gln Glu Pro Asp Thr

705 710 715 720

Lys Leu Arg Pro Leu Phe Glu Ala Cys Gly Glu Val Val Gln Ile Arg

725 730 735

Pro Ile Phe Ser Asn Arg Gly Asp Phe Arg Gly Tyr Cys Tyr Val Glu

20 740 745 750

Phe Lys Glu Glu Lys Ser Ala Leu Gln Ala Leu Glu Met Asp Arg Lys

755 760 765

Ser Val Glu Gly Arg Pro Met Phe Val Ser Pro Cys Val Asp Lys Ser

770 775 780

25 Lys Asn Pro Asp Phe Lys Val Phe Arg Tyr Ser Thr Ser Leu Glu Lys

785 790 795 800

His Lys Leu Phe Ile Ser Gly Leu Pro Phe Ser Cys Thr Lys Glu Glu

805 810 815

Leu Glu Glu Ile Cys Lys Ala His Gly Thr Val Lys Asp Leu Arg Leu

```
                820                     825                     830
        Val Thr Asn Arg Ala Gly Lys Pro Lys Gly Leu Ala Tyr Val Glu Tyr
                835                     840                     845
        Glu Asn Glu Ser Gln Ala Ser Gln Ala Val Met Lys Met Asp Gly Met
 5             850                     855                     860
        Thr Ile Lys Glu Asn Ile Ile Lys Val Ala Ile Ser Asn Pro Pro Gln
        865                     870                     875                     880
        Arg Lys Val Pro Glu Lys Pro Glu Thr Arg Lys Ala Pro Gly Gly Pro
                            885                     890                     895
 10     Met Leu Leu Pro Gln Thr Tyr Gly Ala Arg Gly Lys Gly Arg Thr Gln
                        900                     905                     910
        Leu Ser Leu Leu Pro Arg Ala Leu Gln Arg Pro Ser Ala Ala Ala Pro
                    915                     920                     925
        Gln Ala Glu Asn Gly Pro Ala Ala Ala Pro Ala Val Ala Ala Pro Ala
 15                 930                     935                     940
        Ala Thr Glu Ala Pro Lys Met Ser Asn Ala Asp Phe Ala Lys Leu Phe
        945                     950                     955                     960
        Leu Arg Lys
                    963
 20
        <210> 2
        <211> 3798
        <212> DNA
        <213> Homo sapiens
 25     <400> 2
        ccacgcgtcc g atg gcg act gcg gcc gaa acc tcg gct tca gaa ccc gag        50
                    Met Ala Thr Ala Ala Glu Thr Ser Ala Ser Glu Pro Glu
                                        5                       10
        gct gag tcc aag gct ggg ccc aag gct gac gga gag gag gat gag gtt        98
```

```
              Ala Glu Ser Lys Ala Gly Pro Lys Ala Asp Gly Glu Glu Asp Glu Val
                        15              20              25

              aag gcg gct agg aca agg aga aag gtg tta tcg cgg gct gtg gcc gct      146
              Lys Ala Ala Arg Thr Arg Arg Lys Val Leu Ser Arg Ala Val Ala Ala
   5          30              35              40              45

              gcg aca tac aag acc atg ggg cca gcg tgg gat cag cag gag gaa ggc      194
              Ala Thr Tyr Lys Thr Met Gly Pro Ala Trp Asp Gln Gln Glu Glu Gly
                              50              55              60

              gtg agc gag agc gat ggg gat gag tac gcc atg gct tcc tcc gcg gag      242
  10          Val Ser Glu Ser Asp Gly Asp Glu Tyr Ala Met Ala Ser Ser Ala Glu
                          65              70              75

              agc tcc ccc ggg gag tac gag tgg gaa tat gac gaa gag gag gag aaa      290
              Ser Ser Pro Gly Glu Tyr Glu Trp Glu Tyr Asp Glu Glu Glu Glu Lys
                          80              85              90

  15          aac cag ctg gag att gag aga ctg gag gag cag ttg tct atc aac gtc      338
              Asn Gln Leu Glu Ile Glu Arg Leu Glu Glu Gln Leu Ser Ile Asn Val
                          95              100             105

              tat gac tac aac tgc cat gtg gac ttg atc aga ctg ctc agg ctg gaa      386
              Tyr Asp Tyr Asn Cys His Val Asp Leu Ile Arg Leu Leu Arg Leu Glu
  20          110             115             120             125

              ggg gag ctt acc aag gtg agg atg gcc cgc cag aag atg agt gaa atc      434
              Gly Glu Leu Thr Lys Val Arg Met Ala Arg Gln Lys Met Ser Glu Ile
                              130             135             140

              ttt ccc ttg act gaa gag ctc tgg ctg gag tgg ctg cat gac gag atc      482
  25          Phe Pro Leu Thr Glu Glu Leu Trp Leu Glu Trp Leu His Asp Glu Ile
                          145             150             155

              agc atg gcc cag gat ggc ctg gac aga gag cac gtg tat gac ctc ttt      530
              Ser Met Ala Gln Asp Gly Leu Asp Arg Glu His Val Tyr Asp Leu Phe
                          160             165             170
```

```
gag aaa gcc gtg aag gat tac att tgt cct aac att tgg cta gag tat          578
Glu Lys Ala Val Lys Asp Tyr Ile Cys Pro Asn Ile Trp Leu Glu Tyr
    175             180                 185

ggc cag tac tca gtt ggt ggg att ggt cag aaa ggt ggc ctt gag aaa          626
Gly Gln Tyr Ser Val Gly Gly Ile Gly Gln Lys Gly Gly Leu Glu Lys
    190             195                 200                 205

gtt cgc tcc gtg ttt gaa agg gct ctc tcg tct gtt ggt tta cat atg          674
Val Arg Ser Val Phe Glu Arg Ala Leu Ser Ser Val Gly Leu His Met
                210                 215                 220

acc aaa gga ctc gcc ctc tgg gag gct tac cga gag ttt gaa agt gcg          722
Thr Lys Gly Leu Ala Leu Trp Glu Ala Tyr Arg Glu Phe Glu Ser Ala
                225                 230                 235

att gtg gaa gct gct cgg ctt gag aaa gtc cac agt ctt ttc cgg cga          770
Ile Val Glu Ala Ala Arg Leu Glu Lys Val His Ser Leu Phe Arg Arg
                240                 245                 250

cag ttg gcg atc cca ctc tat gat atg gag gcc aca ttt gca gag tat          818
Gln Leu Ala Ile Pro Leu Tyr Asp Met Glu Ala Thr Phe Ala Glu Tyr
    255             260                 265

gaa gaa tgg tca gaa gac cca ata cca gag tca gta att cag aac tat          866
Glu Glu Trp Ser Glu Asp Pro Ile Pro Glu Ser Val Ile Gln Asn Tyr
270             275                 280                 285

aac aaa gca cta cag cag ctg gag aaa tat aaa ccc tat gaa gaa gca          914
Asn Lys Ala Leu Gln Gln Leu Glu Lys Tyr Lys Pro Tyr Glu Glu Ala
                290                 295                 300

ctg ttg cag gca gag gca cca agg ctg gca gaa tat caa gca tat atc          962
Leu Leu Gln Ala Glu Ala Pro Arg Leu Ala Glu Tyr Gln Ala Tyr Ile
                305                 310                 315

gat ttt gag atg aaa att ggc gat cct gct cgc att cag ttg atc ttt          1010
Asp Phe Glu Met Lys Ile Gly Asp Pro Ala Arg Ile Gln Leu Ile Phe
```

```
                        320              325                 330
      gag cgc gcc ctg gtc gag aac tgc ctt gtc cca gac tta tgg atc cgt        1058
      Glu Arg Ala Leu Val Glu Asn Cys Leu Val Pro Asp Leu Trp Ile Arg
          335              340                 345
5     tac agt cag tac cta gat cga caa ctg aaa gta aag gat ttg gtt tta        1106
      Tyr Ser Gln Tyr Leu Asp Arg Gln Leu Lys Val Lys Asp Leu Val Leu
      350              355                 360                 365
      tct gta cat aac cgc gct att aga aac tgc ccc tgg aca gtt gcc tta        1154
      Ser Val His Asn Arg Ala Ile Arg Asn Cys Pro Trp Thr Val Ala Leu
10                   370                 375                 380
      tgg agt cgg tac ctc ttg gcc atg gag aga cat gga gtt gat cat caa        1202
      Trp Ser Arg Tyr Leu Leu Ala Met Glu Arg His Gly Val Asp His Gln
                   385                 390                 395
      gta att tct gta acc ttc gag aaa gct ttg aat gcc ggc ttc atc cag        1250
15    Val Ile Ser Val Thr Phe Glu Lys Ala Leu Asn Ala Gly Phe Ile Gln
                   400                 405                 410
      gcc act gat tat gtg gag att tgg cag gca tac ctt gat tac ctg agg        1298
      Ala Thr Asp Tyr Val Glu Ile Trp Gln Ala Tyr Leu Asp Tyr Leu Arg
          415                 420                 425
20    aga agg gtt gat ttc aaa caa gac tcc agt aaa gag ctg gag gag ttg        1346
      Arg Arg Val Asp Phe Lys Gln Asp Ser Ser Lys Glu Leu Glu Glu Leu
      430                 435                 440                 445
      agg gcc gcc ttt act cgt gcc ttg gag tat ctg aag cag gag gtg gaa        1394
      Arg Ala Ala Phe Thr Arg Ala Leu Glu Tyr Leu Lys Gln Glu Val Glu
25                   450                 455                 460
      gag cgt ttc aat gag agt ggt gat cca agc tgc gtg att atg cag aac        1442
      Glu Arg Phe Asn Glu Ser Gly Asp Pro Ser Cys Val Ile Met Gln Asn
                   465                 470                 475
      tgg gct agg att gag gct cga ctg tgc aat aac atg cag aaa gct cgg        1490
```

```
          Trp Ala Arg Ile Glu Ala Arg Leu Cys Asn Asn Met Gln Lys Ala Arg
                   480                 485                 490

          gaa ctc tgg gat agc atc atg acc aga gga aat gcc aag tac gcc aac      1538
          Glu Leu Trp Asp Ser Ile Met Thr Arg Gly Asn Ala Lys Tyr Ala Asn
5                  495                 500                 505

          atg tgg cta gag tat tac aac ctg gaa aga gct cat ggt gac acc cag      1586
          Met Trp Leu Glu Tyr Tyr Asn Leu Glu Arg Ala His Gly Asp Thr Gln
          510                 515                 520                 525

          cac tgc cgg aag gct ctg cac cgg gcc gtc cag tgc acc agt gac tac      1634
          His Cys Arg Lys Ala Leu His Arg Ala Val Gln Cys Thr Ser Asp Tyr
10                         530                 535                 540

          cca gag cac gtc tgc gaa gtg tta ctc acc atg gag agg aca gaa ggt      1682
          Pro Glu His Val Cys Glu Val Leu Leu Thr Met Glu Arg Thr Glu Gly
                           545                 550                 555

15        tct tta gaa gat tgg gat ata gct gtt cag aaa act gaa acc cga tta      1730
          Ser Leu Glu Asp Trp Asp Ile Ala Val Gln Lys Thr Glu Thr Arg Leu
                   560                 565                 570

          gct cgt gtc aat gag cag aga atg aag gct gca gag aag gaa gca gcc      1778
          Ala Arg Val Asn Glu Gln Arg Met Lys Ala Ala Glu Lys Glu Ala Ala
20                 575                 580                 585

          ctt gtg cag caa gaa gaa gaa aag gct gaa caa cgg aaa aga gct cgg      1826
          Leu Val Gln Gln Glu Glu Glu Lys Ala Glu Gln Arg Lys Arg Ala Arg
          590                 595                 600                 605

          gct gag aag aaa gcg tta aaa aag aag aaa aag atc aga ggc cca gag      1874
          Ala Glu Lys Lys Ala Leu Lys Lys Lys Lys Lys Ile Arg Gly Pro Glu
25                         610                 615                 620

          aag cgc gga gca gat gag gac gat gag aaa gag tgg ggc gat gat gaa      1922
          Lys Arg Gly Ala Asp Glu Asp Asp Glu Lys Glu Trp Gly Asp Asp Glu
                   625                 630                 635
```

```
gaa gag cag cct tcc aaa cgc aga agg gtc gag aac agc atc cct gca      1970
Glu Glu Gln Pro Ser Lys Arg Arg Arg Val Glu Asn Ser Ile Pro Ala
            640             645             650

gct gga gaa aca caa aat gta gaa gta gca gca ggg ccc gct ggg aaa      2018
Ala Gly Glu Thr Gln Asn Val Glu Val Ala Ala Gly Pro Ala Gly Lys
        655             660             665

tgt gct gcc gta gat gtg gag ccc cct tcg aag cag aag gag aag gca      2066
Cys Ala Ala Val Asp Val Glu Pro Pro Ser Lys Gln Lys Glu Lys Ala
670             675             680             685

gcc tcc ctg aag agg gac atg ccc aag gtg ctg cac gac agc agc aag      2114
Ala Ser Leu Lys Arg Asp Met Pro Lys Val Leu His Asp Ser Ser Lys
            690             695             700

gac agc atc acc gtc ttt gtc agc aac ctg ccc tac agc atg cag gag      2162
Asp Ser Ile Thr Val Phe Val Ser Asn Leu Pro Tyr Ser Met Gln Glu
            705             710             715

ccg gac acg aag ctc agg cca ctc ttc gag gcc tgt ggg gag gtg gtc      2210
Pro Asp Thr Lys Leu Arg Pro Leu Phe Glu Ala Cys Gly Glu Val Val
            720             725             730

cag atc cga ccc atc ttc agc aac cgt ggg gat ttc cga ggt tac tgc      2258
Gln Ile Arg Pro Ile Phe Ser Asn Arg Gly Asp Phe Arg Gly Tyr Cys
        735             740             745

tac gtg gag ttt aaa gaa gag aaa tca gcc ctt cag gca ctg gag atg      2306
Tyr Val Glu Phe Lys Glu Glu Lys Ser Ala Leu Gln Ala Leu Glu Met
750             755             760             765

gac cgg aaa agt gta gaa ggg agg cca atg ttt gtt tcc ccc tgt gtg      2354
Asp Arg Lys Ser Val Glu Gly Arg Pro Met Phe Val Ser Pro Cys Val
            770             775             780

gat aag agc aaa aac ccc gat ttt aag gtg ttc agg tac agc act tcc      2402
Asp Lys Ser Lys Asn Pro Asp Phe Lys Val Phe Arg Tyr Ser Thr Ser
```

```
                        785                790                795
      cta gag aaa cac aag ctg ttc atc tca ggc ctg cct ttc tcc tgt act    2450
      Leu Glu Lys His Lys Leu Phe Ile Ser Gly Leu Pro Phe Ser Cys Thr
                   800                805                810
5     aaa gag gaa cta gaa gaa atc tgt aag gct cat ggc acc gtg aag gac    2498
      Lys Glu Glu Leu Glu Glu Ile Cys Lys Ala His Gly Thr Val Lys Asp
            815                820                825
      ctc agg ctg gtc acc aac cgg gct ggc aaa cca aag ggc ctg gcc tac    2546
      Leu Arg Leu Val Thr Asn Arg Ala Gly Lys Pro Lys Gly Leu Ala Tyr
10    830                835                840                845
      gtg gag tat gaa aat gaa tcc cag gcg tcg cag gct gtg atg aag atg    2594
      Val Glu Tyr Glu Asn Glu Ser Gln Ala Ser Gln Ala Val Met Lys Met
                   850                855                860
      gac ggc atg act atc aaa gag aac atc atc aaa gtg gca atc agc aac    2642
      Asp Gly Met Thr Ile Lys Glu Asn Ile Ile Lys Val Ala Ile Ser Asn
15                 865                870                875
      cct cct cag agg aaa gtt cca gag aag cca gag acc agg aag gca cca    2690
      Pro Pro Gln Arg Lys Val Pro Glu Lys Pro Glu Thr Arg Lys Ala Pro
                   880                885                890
20    ggt ggc ccc atg ctt ttg ccg cag aca tac gga gcg agg ggg aag gga    2738
      Gly Gly Pro Met Leu Leu Pro Gln Thr Tyr Gly Ala Arg Gly Lys Gly
            895                900                905
      agg acg cag ctg tct cta ctg cct cgt gcc ctg cag cgc cca agt gct    2786
      Arg Thr Gln Leu Ser Leu Leu Pro Arg Ala Leu Gln Arg Pro Ser Ala
25    910                915                920                925
      gca gct cct cag gct gag aac ggc cct gcc gcg gct cct gca gtt gcc    2834
      Ala Ala Pro Gln Ala Glu Asn Gly Pro Ala Ala Ala Pro Ala Val Ala
                   930                935                940
      gcc cca gca gcc acc gag gca ccc aag atg tcc aat gcc gat ttt gcc    2882
```

Ala Pro Ala Ala Thr Glu Ala Pro Lys Met Ser Asn Ala Asp Phe Ala
           945   950   955

aag ctg ttt ctg aga aag tgaacgggac gctgggagac aggaaatgcc   2930
Lys Leu Phe Leu Arg Lys

5   960

ttacttcact ctggccggc ggacctccca ccacccagca gtgcactggg gatggacagg   2990

cctggtgtgc tgcgtgctcg caaccacaga tggctcctcg gctttagaca gaaaggggaa   3050

ggggttctaa gtcaagagcc tttcagtgct ccctcatatt gagggcagtg gcagaaaagt   3110

gaccactctg caggctgggc ccaggatgtg gtgtcctgag atagttttgt atcttaaaga   3170

10 ctgaggcaca gaagcgaaac gagaacacac tgttttgag acacagttgt ccaaatgttt   3230

ctggccagct ccggccccctt tttgtatgac acttctcttc caccctgcac agcacatgtg   3290

cccgtcattc ttttaatttt aaaagatgaa atggcagatg ctagtaattc acagaatggc   3350

ctcttgtggg ggtgggtctg agggaagtca gctataaaac atttgctgga gttttgttca   3410

atggggctgt gcattttat attatgtgtt tgtaaatgac atgtcagccc ttgtttcatg   3470

15 tttcctaaaa gcagaatatt tgcaacattt gttttgtata ggaattattt gtgccacctg   3530

ctgtggactg ttttctttgc ctagtgacta gtgacctgtg ttgtctaaac atgagtttca   3590

gccctttggt tttgtttaat accatgtcaa atgcaaactt caattctccc catttagctt   3650

tattaaactg acgttctctt caaaacttct tgctgaatgg tactcagatg tgcattcaca   3710

tacagatgtg ttttgaagtg ggtgtacctt gctttaccta atagatgtgt aaatagaact   3770

20 tttgtaagtc aaaaaaaaaa aaaaaaa   3798

      <210> 3

      <211> 10

      <212> PRT

25   <213> Homo sapiens

      <400> 3

Val Tyr Asp Tyr Asn Cys His Val Asp Leu
        5   10

<210> 4

<211> 10

<212> PRT

<213> Homo sapiens

5   <400> 4

Leu Phe Glu Lys Ala Val Lys Asp Tyr Ile

                         5   10

<210> 5

10   <211> 9

<212> PRT

<213> Homo sapiens

<400> 5

Asn Tyr Asn Lys Ala Leu Gln Gln Leu

15   5

<210> 6

<211> 9

<212> PRT

20   <213> Homo sapiens

<400> 6

Ala Tyr Ile Asp Phe Glu Met Lys Ile

                         5

25   <210> 7

<211> 10

<212> PRT

<213> Homo sapiens

<400> 7

Asp Tyr Val Glu Ile Trp Gln Ala Tyr Leu
                    5   10

<210> 8

<211> 9

<212> PRT

<213> Homo sapiens

<400> 8

Asp Tyr Leu Arg Arg Arg Val Asp Phe
                    5

<210> 9

<211> 9

<212> PRT

<213> Homo sapiens

<400> 9

Ala Phe Thr Arg Ala Leu Glu Tyr Leu
                    5

<210> 10

<211> 9

<212> PRT

<213> Homo sapiens

<400> 10

Asp Tyr Asn Cys His Val Asp Leu Ile
                    5

<210> 11

<211> 10

<212> PRT

<213> Homo sapiens

<400> 11

Ile Phe Pro Leu Thr Glu Glu Leu Trp Leu

5   5   10

<210> 12

<211> 9

<212> PRT

10   <213> Homo sapiens

<400> 12

Asp Tyr Ile Cys Pro Asn Ile Trp Leu

5

<210> 13

15   <211> 10

<212> PRT

<213> Homo sapiens

<400> 13

20   Glu Tyr Gly Gln Tyr Ser Val Gly Gly Ile

5   10

<210> 14

<211> 9

25   <212> PRT

<213> Homo sapiens

<400> 14

Ala Tyr Arg Glu Phe Glu Ser Ala Ile

5

<210> 15

<211> 10

<212> PRT

5   <213> Homo sapiens

<400> 15

Leu Phe Arg Arg Gln Leu Ala Ile Pro Leu

                    5   10

10   <210> 16

<211> 10

<212> PRT

<213> Homo sapiens

<400> 16

15   Glu Tyr Glu Glu Trp Ser Glu Asp Pro Ile

                    5   10

<210> 17

<211> 9

<212> PRT

20   <213> Homo sapiens

<400> 17

Lys Tyr Lys Pro Tyr Glu Glu Ala Leu

                    5

25

<210> 18

<211> 10

<212> PRT

<213> Homo sapiens

<400> 18

Arg Tyr Ser Gln Tyr Leu Asp Arg Gln Leu
                    5   10

<210> 19

<211> 10

<212> PRT

<213> Homo sapiens

<400> 19

Thr Phe Glu Lys Ala Leu Asn Ala Gly Phe
                    5   10

<210> 20

<211> 10

<212> PRT

,<213> Homo sapiens

<400> 20

Asp Phe Lys Gln Asp Ser Ser Lys Glu Leu
                    5   10

<210> 21

<211> 10

<212> PRT

<213> Homo sapiens

<400> 21

Asp Tyr Pro Glu His Val Cys Glu Val Leu
                    5   10

<210> 22

<211> 10

<212> PRT

<213> Homo sapiens

<400> 22

5   Asp Phe Arg Gly Tyr Cys Tyr Val Glu Phe

                            5   10

<210> 23

<211> 9

10   <212> PRT

  <213> Homo sapiens

<400> 23

Glu Phe Lys Glu Glu Lys Ser Ala Leu

                          5

15

<210> 24

<211> 9

<212> PRT

<213> Homo sapiens

20   <400> 24

Pro Phe Ser Cys Thr Lys Glu Glu Leu

                          5

<210> 25

25   <211> 9

<212> PRT

<213> Homo sapiens

<400> 25

Trp Leu His Asp Glu Ile Ser Met Ala

<210> 26

<211> 9

5 <212> PRT

<213> Homo sapiens

<400> 26

Ser Leu Phe Arg Arg Gln Leu Ala Ile

5

10

<210> 27

<211> 9

<212> PRT

<213> Homo sapiens

15 <400> 27

Leu Leu Gln Ala Glu Ala Pro Arg Leu

5

<210> 28

20 <211> 9

<212> PRT

<213> Homo sapiens

<400> 28

Arg Leu Ala Glu Tyr Gln Ala Tyr Ile

25 5

<210> 29

<211> 9

<212> PRT

<213> Homo sapiens

<400> 29

Leu Leu Ala Met Glu Arg His Gly Val

5

<210> 30

<211> 9

<212> PRT

<213> Homo sapiens

<400> 30

Asn Val Tyr Asp Tyr Asn Cys His Val

5

<210> 31

<211> 9

<212> PRT

<213> Homo sapiens

<400> 31

Lys Met Ser Glu Ile Phe Pro Leu Thr

5

<210> 32

<211> 9

<212> PRT

<213> Homo sapiens

<400> 32

Trp Leu Glu Tyr Gly Gln Tyr Ser Val

5

<210> 33

<211> 10

<212> PRT

<213> Homo sapiens

5 <400> 33

Ser Val Phe Glu Arg Ala Leu Ser Ser Val

                  5   10

<210> 34

10 <211> 10

<212> PRT

<213> Homo sapiens

<400> 34

Ala Leu Leu Gln Ala Glu Ala Pro Arg Leu

15   5   10

<210> 35

<211> 10

<212> PRT

20 <213> Homo sapiens

<400> 35

Lys Ile Gly Asp Pro Ala Arg Ile Gln Leu

                  5   10

25 <210> 36

<211> 10

<212> PRT

<213> Homo sapiens

<400> 36

Ile Gln Leu Ile Phe Glu Arg Ala Leu Val
                    5   10

<210> 37

<211> 9

<212> PRT

<213> Homo sapiens

<400> 37

Gln Leu Ile Phe Glu Arg Ala Leu Val
                    5

<210> 38

<211> 10

<212> PRT

<213> Homo sapiens

<400> 38

Asp Leu Trp Ile Arg Tyr Ser Gln Tyr Leu
                    5   10

<210> 39

<211> 9

<212> PRT

<213> Homo sapiens

<400> 39

Ala Leu Trp Ser Arg Tyr Leu Leu Ala
                    5

<210> 40

<211> 10

<212> PRT

<213> Homo sapiens

<400> 40

Ala Leu Trp Ser Arg Tyr Leu Leu Ala Met
                        5   10

5   <210> 41

       <211> 10

       <212> PRT

       <213> Homo sapiens

       <400> 41

10   Tyr Leu Leu Ala Met Glu Arg His Gly Val
                             5   10

       <210> 42

       <211> 10

15   <212> PRT

       <213> Homo sapiens

       <400> 42

       Ala Leu Asn Ala Gly Phe Ile Gln Ala Thr
                             5   10

20

       <210> 43

       <211> 9

       <212> PRT

       <213> Homo sapiens

25   <400> 43

       Tyr Leu Asp Tyr Leu Arg Arg Arg Val
                             5

       <210> 44

<211> 10

<212> PRT

<213> Homo sapiens

<400> 44

5   Ile Met Thr Arg Gly Asn Ala Lys Tyr Ala

                         5   10

<210> 45

<211> 9

10   <212> PRT

<213> Homo sapiens

<400> 45

Asn Met Trp Leu Glu Tyr Tyr Asn Leu

                         5

15

<210> 46

<211> 10

<212> PRT

<213> Homo sapiens

20   <400> 46

Val Leu His Asp Ser Ser Lys Asp Ser Ile

                         5   10

<210> 47

25   <211> 9

<212> PRT

<213> Homo sapiens

<400> 47

Ser Ile Thr Val Phe Val Ser Asn Leu

<210> 48

<211> 9

<212> PRT

<213> Homo sapiens

<400> 48

Ser Met Gln Glu Pro Asp Thr Lys Leu
5

<210> 49

<211> 10

<212> PRT

<213> Homo sapiens

<400> 49

Lys Ser Val Glu Gly Arg Pro Met Phe Val
5   10

<210> 50

<211> 9

<212> PRT

<213> Homo sapiens

<400> 50

Lys Val Phe Arg Tyr Ser Thr Ser Leu
5

<210> 51

<211> 9

<212> PRT

<213> Homo sapiens

<400> 51

Met Leu Leu Pro Gln Thr Tyr Gly Ala
5

<210> 52

<211> 10

<212> PRT

<213> Homo sapiens

<400> 52

Lys Met Ser Asn Ala Asp Phe Ala Lys Leu
5   10

<210> 53

<211> 10

<212> PRT

<213> Artificial Sequence

<220>

<221> VARIANT

<222> 2

<223> Xaa is Phe, Tyr, Met or Trp

<220>

<221> VARIANT

<222> 10

<223> Xaa is Phe, Leu, Ile, Trp or Met.

<400> 53

Val Xaa Asp Tyr Asn Cys His Val Asp Xaa
5   10

<210> 54

<211> 10

<212> PRT

<213> Artificial Sequence

<220>

<221> VARIANT

<222> 2

<223> Xaa is Phe, Tyr, Met or Trp.

<220>

<221> VARIANT

<222> 10

<223> Xaa is Phe, Leu, Ile, Trp or Met.

<400> 54

Leu Xaa Glu Lys Ala Val Lys Asp Tyr Xaa
                    5   10

<210> 55

<211> 9

<212> PRT

<213> Artificial Sequence

<220>

<221> VARIANT

<222> 2

<223> Xaa is Phe, Tyr, Met or Trp.

<220>

<221> VARIANT

<222> 9

<223> Xaa is Phe, Leu, Ile, Trp or Met.

<400> 55

Asn Xaa Asn Lys Ala Leu Gln Gln Xaa

5

<210> 56

<211> 9

<212> PRT

<213> Artificial Sequence

<220>

<221> VARIANT

<222> 2

<223> Xaa is Phe, Tyr, Met or Trp.

<220>

<221> VARIANT

<222> 9

<223> Xaa is Phe, Leu, Ile, Trp or Met.

<400> 56

Ala Xaa Ile Asp Phe Glu Met Lys Xaa

5

<210> 57

<211> 10

<212> PRT

<213> Artificial Sequence

<220>

<221> VARIANT

<222> 2

<223> Xaa is Phe, Tyr, Met or Trp.

<220>

<221> VARIANT

<222> 10

<223> Xaa is Phe, Leu, Ile, Trp or Met.

<400> 57

Asp Xaa Val Glu Ile Trp Gln Ala Tyr Xaa

5   5   10

<210> 58

<211> 9

<212> PRT

10   <213> Artificial Sequence

<220>

<221> VARIANT

<222> 2

<223> Xaa is Phe, Tyr, Met or Trp.

15   <220>

<221> VARIANT

<222> 9

<223> Xaa is Phe, Leu, Ile, Trp or Met.

<400> 58

20   Asp Xaa Leu Arg Arg Arg Val Asp Xaa

5

<210> 59

<211> 9

25   <212> PRT

<213> Artificial Sequence

<220>

<221> VARIANT

<222> 2

<223> Xaa is Phe, Tyr, Met or Trp.

<220>

<221> VARIANT

<222> 9

<223> Xaa is Phe, Leu, Ile, Trp or Met.

<400> 59

Ala Xaa Thr Arg Ala Leu Glu Tyr Xaa

5

<210> 60

<211> 9

<212> PRT

<213> Artificial Sequence

<220>

<221> VARIANT

<222> 2

<223> Xaa is Leu, Met, Val, Ile or Gln.

<220>

<221> VARIANT

<222> 9

<223> Xaa is Val or Leu.

<400> 60

Trp Xaa His Asp Glu Ile Ser Met Xaa

5

<210> 61

<211> 9

<212> PRT

<213> Artificial Sequence

<220>

<221> VARIANT

<222> 2

<223> Xaa is Leu, Met, Val, Ile or Gln.

5 <220>

<221> VARIANT

<222> 9

<223> Xaa is Val or Leu.

<400> 61

10 Ser Xaa Phe Arg Arg Gln Leu Ala Xaa

           5

<210> 62

<211> 9

15 <212> PRT

<213> Artificial Sequence

<220>

<221> VARIANT

<222> 2

20 <223> Xaa is Leu, Met, Val, Ile or Gln.

<220>

<221> VARIANT

<222> 9

<223> Xaa is Val or Leu.

25 <400> 62

Leu Xaa Gln Ala Glu Ala Pro Arg Xaa

           5

<210> 63

<211> 9

<212> PRT

<213> Artificial Sequence

<220>

5   <221> VARIANT

<222> 2

<223> Xaa is Leu, Met, Val, Ile or Gln.

<220>

<221> VARIANT

10   <222> 9

<223> Xaa is Val or Leu.

<400> 63

Arg Xaa Ala Glu Tyr Gln Ala Tyr Xaa

            5

15

<210> 64

<211> 9

<212> PRT

<213> Artificial Sequence

20   <220>

<221> VARIANT

<222> 2

<223> Xaa is Leu, Met, Val, Ile or Gln.

<220>

25   <221> VARIANT

<222> 9

<223> Xaa is Val or Leu.

<400> 64

Leu Xaa Ala Met Glu Arg His Gly Xaa

30   5